

11. (Twice Amended) An apparatus for manufacture of a composite material comprising at least one layer of reinforcing woven material and at least one layer of PTFE foil or ePTFE foil, where said at least one layer of foil is laminated together with said at least one layer of woven material by heat and pressure, said apparatus comprising means for laminating said at least one layer of reinforcing woven material and said at least one layer of foil together, wherein said at least one layer of foil is laminated together with said at least one layer of woven material by heat and pressure, as the apparatus comprises means for lamination of the composite material by a combined pressure and heat supply, wherein the apparatus further comprises means for fixation of the uncooled or partly cooled composite material, wherein said fixation means cooperates with a controllable cooling means, wherein said apparatus is (suitable for) cooling said composite material from about 300 to 420° C to about 50° C in about 0.1 to about 240 seconds.

Remarks

Claims 1-13 remain pending in the application. Claims 1 and 11 have been amended as shown above. The claims were amended to more fully clarify the invention. No new matter has been added by the amendments above. Favorable reconsideration is respectfully requested in light of the above amendments and the following comments.

The Examiner asserts that the substitute specification submitted in the last response was insufficient. (Applicants include herein a complete copy of the substitute specification submitted in the previous response.) Applicants assert that the substitute specification includes no new matter.

The Examiner rejected claims 1-10 under 35 U.S.C. § 112, second paragraph. Applicants respectfully traverse this rejection.

The Examiner rejected claims 11-13 under 35 U.S.C. § 102(b) as being anticipated by or, in the alternative under 35 U.S.C. § 103(a) as obvious over Smuck et al. Applicants respectfully traverse this rejection.

The Examiner rejected claims 1-10 under 35 U.S.C. 103(a) as being unpatentable over Sumitomo in view of Sandt. Applicants respectfully traverse this rejection.

35 U.S.C. § 112 Rejection

The Examiner rejected claims 1-10 under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicant regards as the invention. Specifically, the Examiner asserts that the claims are incomplete because claim 1 fails to recite either the laminating conditions (temperature or pressure) employed or that the cooling step is conducted at or under a high pressure such that the cooling cycle in the wherein clause has no point of reference.

Applicant has amended claim 1 to clarify that the cooling step, as the heating step is, is accomplished under pressure. Applicant asserts that this amendment to claim 1 overcomes the Examiner's rejection, and therefore requests withdrawal of the rejection.

Prior Art Based Rejections

The Examiner rejected claims 11-13 under 35 U.S.C. § 102(b) as being anticipated by or, in the alternative under 35 U.S.C. § 103(a) as obvious over Smuck et al. Claim 11 has been amended to more fully clarify the invention. The Applicants submit that the disclosure of Smuck does not anticipate the claimed invention, and that the Examiner failed to make out a *prima facie* case of obviousness and that therefore the rejections should be withdrawn.

In order to establish *prima facie* obviousness, three basic criteria must be met, namely: (1) there must be some suggestion or motivation to combine the references or modify the reference teaching; (2) there must be a reasonable expectation of success; and (3) the reference or references when combined must teach or suggest each claim limitation. Applicants submit that the Office Action failed to state a *prima facie* case of obviousness, and therefore the burden has not properly shifted to Applicants to present evidence of nonobviousness.

The Applicants submit that the apparatus of Smuck, even the embodiment represented by Figure 4, is not capable of rapid cooling of the composite material. The apparatus of Smuck transfers the pressure from the rollers through the endless band and onto the laminate. This results in a loss of cooling, and heating, respectively as well as a decrease in the rate of cooling (and heating). Consequently, this apparatus cannot be used for rapid cooling. The apparatus of Smuck actually contain a number of inherent features that make it useful for slow cooling. Moreover, the apparatus of Smuck is not suitable for lamination of PTFE, because the heating temperature obtainable by the rollers in Smuck are insufficient for laminating and sintering

PTFE materials. Specifically, the temperatures utilized by Smuck range from 150° C to 250° C (page 13, lns. 3-8). The Applicants' invention functions as temperatures of from 300° C to 420° C.

Based on the above, Applicants submit that the apparatus disclosed by Smuck do not have all of the limitations of the amended claim 11, and therefore do not anticipate claims 11-13. Furthermore, Applicants' assert that there would be no suggestion to modify the teaching of Smuck to create Applicants' invention, and further assert that Smuck cannot be modified to result in the Applicants' invention. Applicants respectfully request withdrawal of these rejections.

The Examiner rejected claims 1-10 under 35 U.S.C. 103(a) as being unpatentable over Sumitomo in view of Sandt. Although this rejection has not been raised with respect to the newly amended claims, it will be addressed to the extent that it may be applied.

In order to establish *prima facie* obviousness, three basic criteria must be met, namely: (1) there must be some suggestion or motivation to combine the references or modify the reference teaching; (2) there must be a reasonable expectation of success; and (3) the reference or references when combined must teach or suggest each claim limitation. Applicants submit that the Office Action failed to state a *prima facie* case of obviousness, and therefore the burden has not properly shifted to Applicants to present evidence of nonobviousness.

Applicants submit as a preliminary matter that the combination of the references fail to teach or suggest each claim limitation. Sumitomo discloses a method for laminating thin PTFE films and sintering them together at an elevated temperature of 390° C and a pressure of 10 Kg/cm² for 10 minutes. However, Sumitomo does not teach the rapid cooling as the newly amended claim 1 requires. Not only does Sumitomo not disclose the rapid cooling utilized in the Applicants' invention, it actually teaches against it. Sumitomo states that "in order to prevent the warping and the bending of the sheet, said sheet is preferably gradually cooled after a sintering has been completed." (pg. 3, lines 15-17).

Sandt also does not teach the rapid cooling that is required in the claimed invention. Sandt also teaches away from such rapid cooling, stating that "cooling is done gradually so as to minimize the chance for bond rupture as a result of unequal contraction of the assembly during this step." (col. 1, lines 38-41). Therefore, one of skill in the art, combining the teachings of Sumitomo and Sandt would not have obtained the Applicants' invention, and would have actually been taught against Applicants' invention by overwhelming admonitions regarding

problems created by rapid cooling. Therefore, Applicants submit that the claimed invention is not obvious over Sumitomo in view of Sandt, and withdrawal of this rejection is respectfully requested.


Conclusion

In view of the amendments and comments presented herein, favorable reconsideration in the form of a Notice of Allowance is respectfully requested.

Respectfully submitted,

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Marked up version of Claims

1. (Twice Amended) A method of manufacture of a composite product comprising at least one layer of reinforcing woven material and at least one layer of PTFE foil or ePTFE foil, wherein said at least one layer of foil is laminated together with said at least one layer of woven material by heat and pressure, wherein the composite material is subsequently cooled in a fully or partly fixed state, and wherein said composite material is cooled under pressure, from about 300 to 420 ° C to about 50 ° C in about 0.1 to 240 seconds.

11. (Twice Amended) An apparatus for manufacture of a composite material comprising at least one layer of reinforcing woven material and at least one layer of PTFE foil or ePTFE foil, where said at least one layer of foil is laminated together with said at least one layer of woven material by heat and pressure, said apparatus comprising means for laminating said at least one layer of reinforcing woven material and said at least one layer of foil together, wherein said at least one layer of foil is laminated together with said at least one layer of woven material by heat and pressure, as the apparatus comprises means for lamination of the composite material by a combined pressure and heat supply, wherein the apparatus further comprises means for fixation of the uncooled or partly cooled composite material, wherein said fixation means cooperates with a controllable cooling means, wherein said apparatus is suitable for cooling said composite material from about 300 to 420° C to about 50° C in about 0.1 to about 240 seconds.

